Structural Complexity Metrics on SDL Programs[1]

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Structural complexity metrics play an important role in modern software engineering. Testing, bugfixing cover an increasing percentage of the software lifecycle. The most significant part of the cost spent on software design is connected to the maintenance of the product. The cost of software maintenance highly correlates with the structural complexity of the code. With the aid of a good complexity-measurement tool the critical parts of the software can be predicted. Metrics can help writing good quality code by predicting development and testing efforts as early as the design phase.

The Specification and Description Language (SDL) [1] is a high-level specification language widely used in the telecommunation industry (e.g. in protocol specification). The language supports numerous special constructs, like non-determinstic decisions, axiomatic abstract datatype definition, and others. The language is able to work with both text-based representation and graphical representation. The aforementioned language constructs are rarely found in widely used programming languages – like C, C++ or Java –, thus they cause difficulties when applying conventional metrics on SDL programs.

A multiparadigm structural complexity metric is described in [2]. Based on earlier experiments [3, 4] we extend this metric to cover the SDL-specific language constructs. We validate the metric using a database of five-year-long test results originated from real-world applications developed at a major multinational telecommunications company.

References

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